

Customer No.: 31561
Application No.: 10/709,036
Docket No.: 12476-US-PA

AMENDMENT

To the Claims:

1. (currently amended) A method of forming a bond microstructure, comprising:
sequentially forming a tin layer and a gold layer on one of two members, a % weight ratio of tin to gold being 20:80 having a variation range of about $\pm 3\sim 4\%$; and
treating the tin layer and the gold layer with a first temperature of no more than 280°C or a second temperature of higher than 280°C to form bond microstructures having different characteristics, wherein when the tin layer and the gold layer are treated with the first temperature, the bond microstructure will have a layered structure comprising an AuSn layer and an Au₅Sn layer and when the tin layer and the gold layer are treated with the second temperature, the bond microstructure will have an eutectic structure containing AuSn and Au₅Sn.

Claims 2-5 (canceled).

6. (original) The method for controlling a bond microstructure of claim 1, wherein the step of treating the tin layer and the gold layer with the first temperature or the second temperature comprises heating under pressure or a reflowing method.

7. (original) The method of claim 1, wherein the gold layer is formed over the tin layer.

8. (original) The method of claim 1, wherein the tin layer is formed over the gold layer.

9. (original) The method of claim 1, wherein the tin layer is formed by performing an electroplating process, an evaporation process, an electroless plating or a sputtering process.

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10. (original) The method of claim 1, further comprising forming an adhesion layer, a barrier layer and a wetting layer on one or both of the two members before forming the tin layer and the gold layer on one of the two members.

11. (original) The method of claim 10, wherein the adhesion layer comprises titanium or chromium.

12. (original) The method of claim 10, wherein the barrier layer comprises Co, Ni, Pt or Pd.

13. (original) The method of claim 10, wherein the wetting layer comprises Au or Cu.

14. (original) The method of claim 1, wherein the two members comprise a flip chip and a substrate.

15. (original) The method of claim 1, wherein the two members comprise a photo-electronic device and a substrate.

16. (currently amended) A method of forming a bond microstructure, comprising:
sequentially forming a tin layer and a gold layer on two members respectively, the a % weight ratio of tin to gold being 20:80 having a variation range about $\pm 3\sim 4\%$; and

treating the tin layer and the gold layer with a first temperature of no more than 280°C or a second temperature of higher than 280°C to form bond microstructures having different characteristics, wherein when the tin layer and the gold layer are treated with the first temperature, the bond microstructure will have a layered structure comprising an AuSn layer and an Au₅Sn

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layer and when the tin layer and the gold layer are treated with the second temperature, the bond microstructure will have an eutectic structure containing AuSn and Au₅Sn.

Claims 17-20 (canceled).

21. (original) The method of claim 16, wherein the step of treating the tin layer and the gold layer with the first temperature of the second temperature comprises heating under pressure or a reflowing method.

22. (original) The method of claim 16, wherein the tin layer is formed by performing an electroplating process, an evaporation process, an electroless plating process or a sputtering process.

23. (original) The method of claim 16, further comprising forming an adhesion layer, a barrier layer and a wetting layer on one or both of the two members before forming the tin layer and the gold layer on the two members.

24. (original) The method of claim 23, wherein the adhesion layer comprises titanium or chromium.

25. (original) The method of claim 23, wherein the barrier layer comprises Co, Ni, Pt or Pd.

26. (original) The method of claim 23, wherein the wetting layer comprises Au or Cu.

27. (original) The method of claim 16, wherein the two members comprise a flip chip and a substrate.

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28. (original) The method of claim 16, wherein the two members comprise a photo-electronic device and a substrate.